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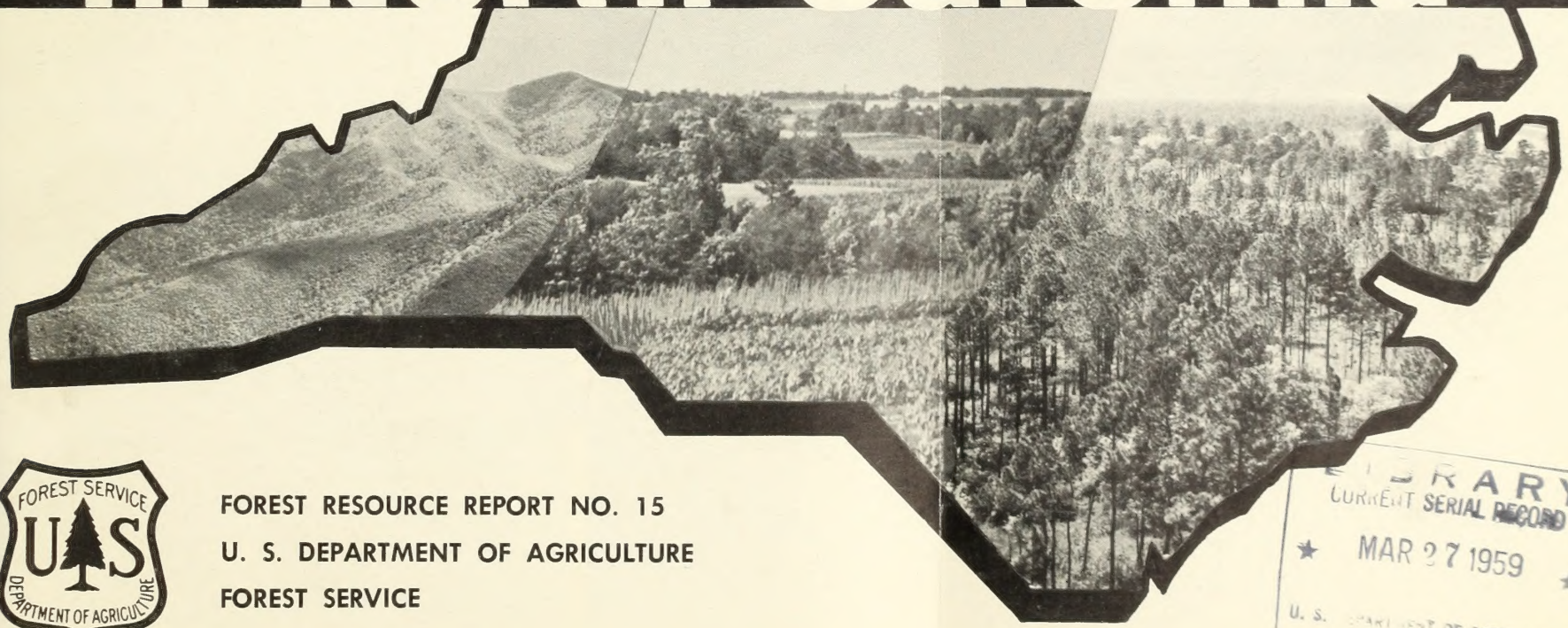
# TIMBER

## in North Carolina



FOREST RESOURCE REPORT NO. 15

U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

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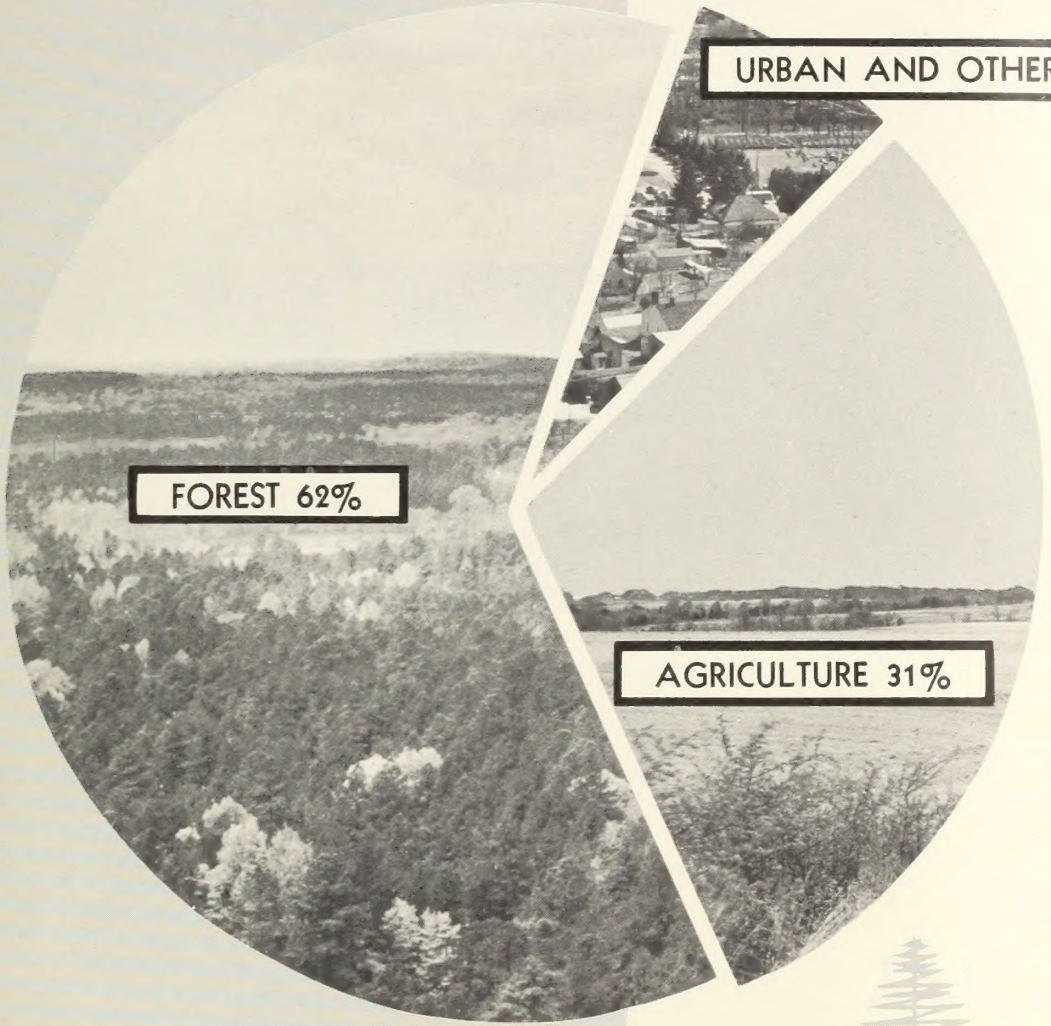
The rapidly increasing population in the United States creates a rising need for wood products. This booklet points out current and long-term trends in North Carolina's timber supply outlook and the increase in forestry effort needed if North Carolina is to maintain its important role as a leading timber-producing State.

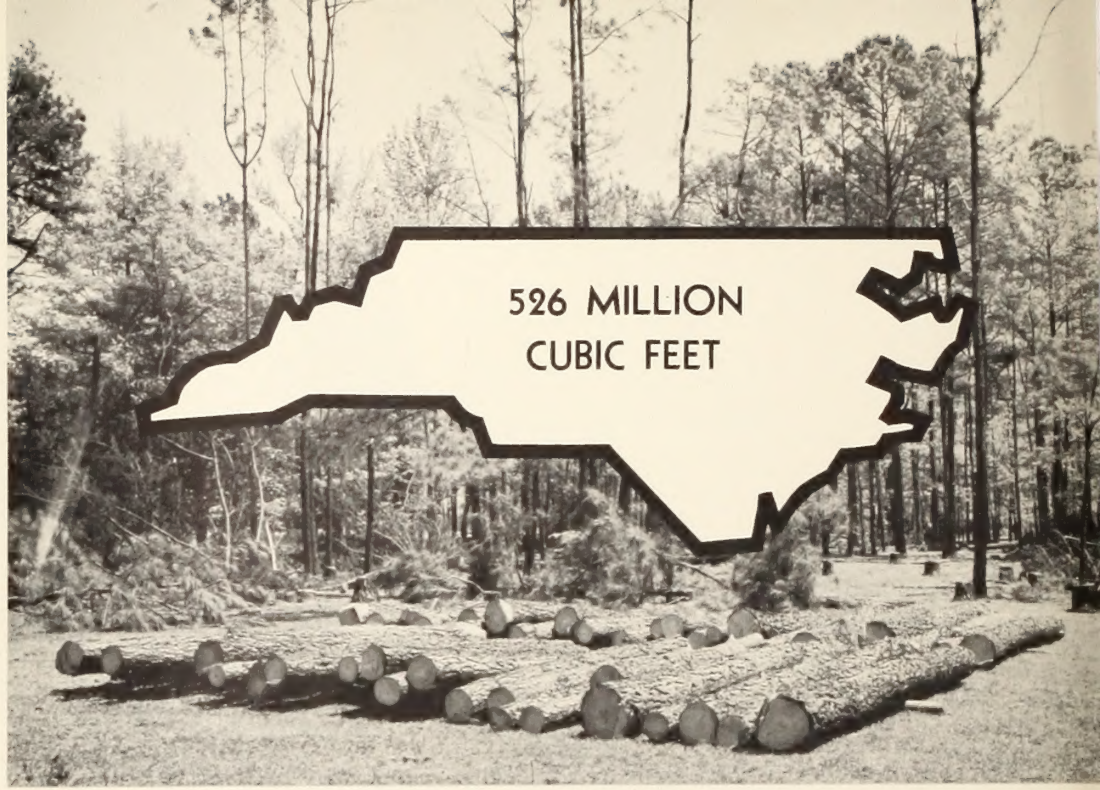
The information contained herein is based primarily upon the findings of a recently completed survey of the State's timber resources conducted by the U. S. Forest Service's Southeastern Forest Experiment Station, with assistance from the North Carolina Forest Service, TVA, and The Champion Paper and Fibre Company.




# Forests Cover Two-Thirds of the State

North Carolina is one of the leading timber-producing States. Timberlands total 19.3 million acres. This is twice the area of crop and pasture lands, or 62 percent of its total land area. By contrast, 25 percent of the Nation is timberland.

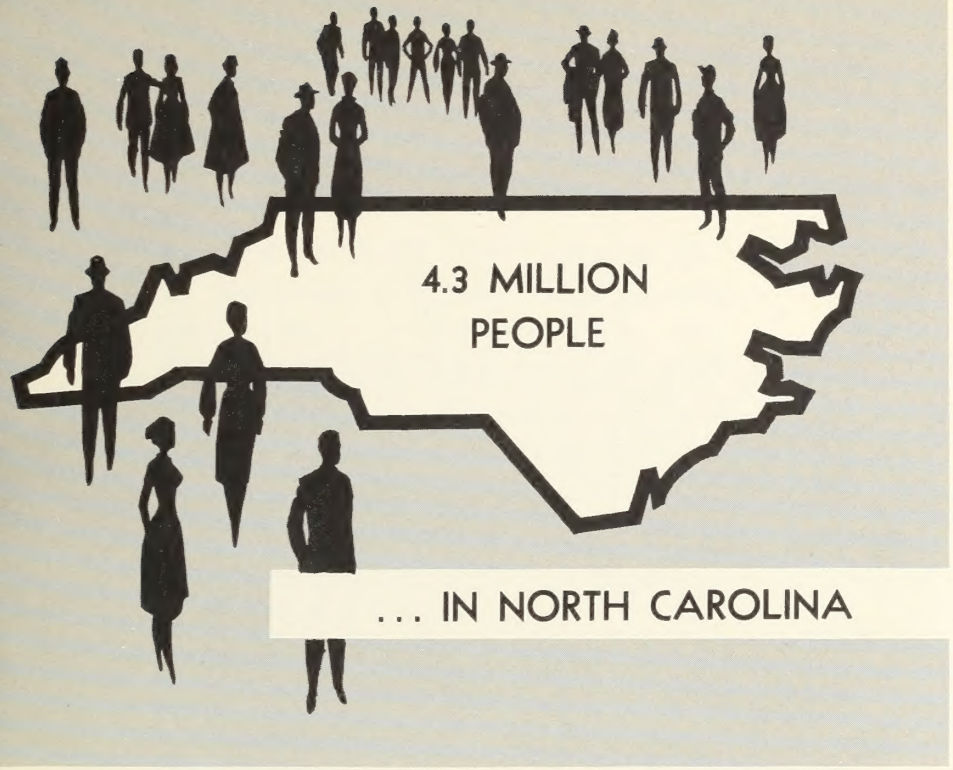
# Timber cut in North Carolina . . .

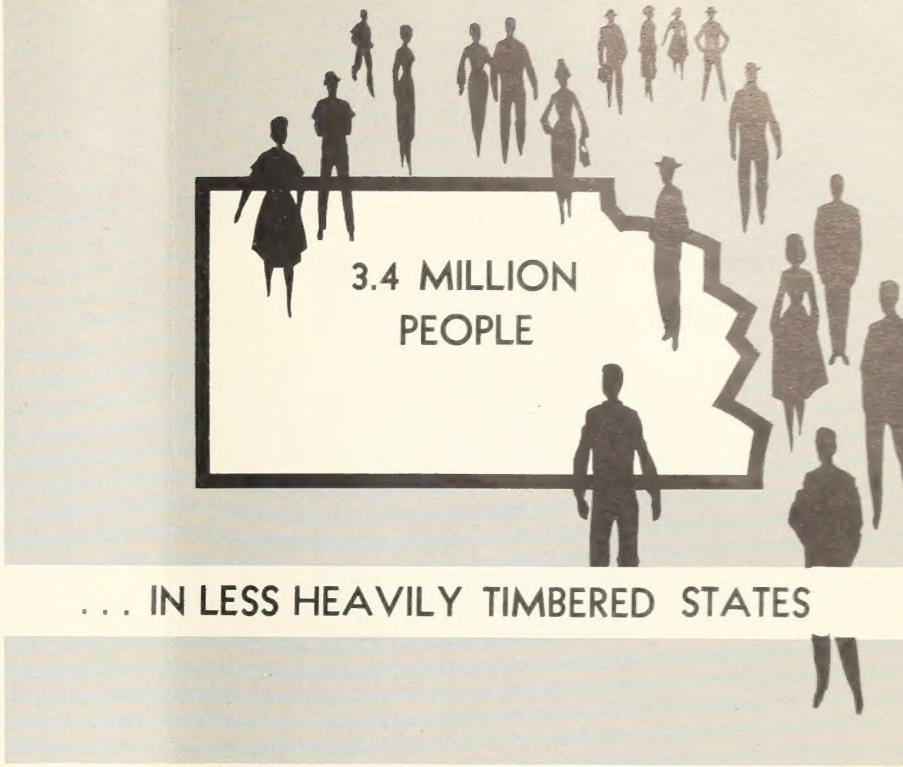


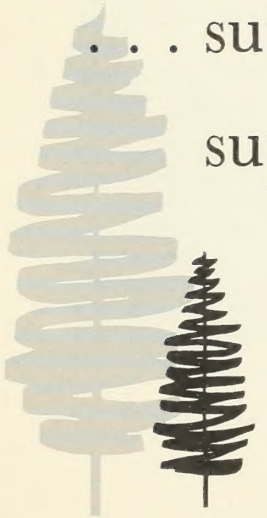
68 CUBIC FEET

Americans use wood liberally, perhaps extravagantly by comparison with other nations. A typical American uses twice as much lumber as a Russian, four times as much as an Englishman, and six times as much as a Frenchman. Our use of paper, too, far exceeds that of any other nation.

Providing the typical American with the wood products he is accustomed to using each year, in 1955 required cutting about 70 cubic feet of timber from the Nation's forests. This would make a block of solid wood 3 feet square and nearly 8 feet high.



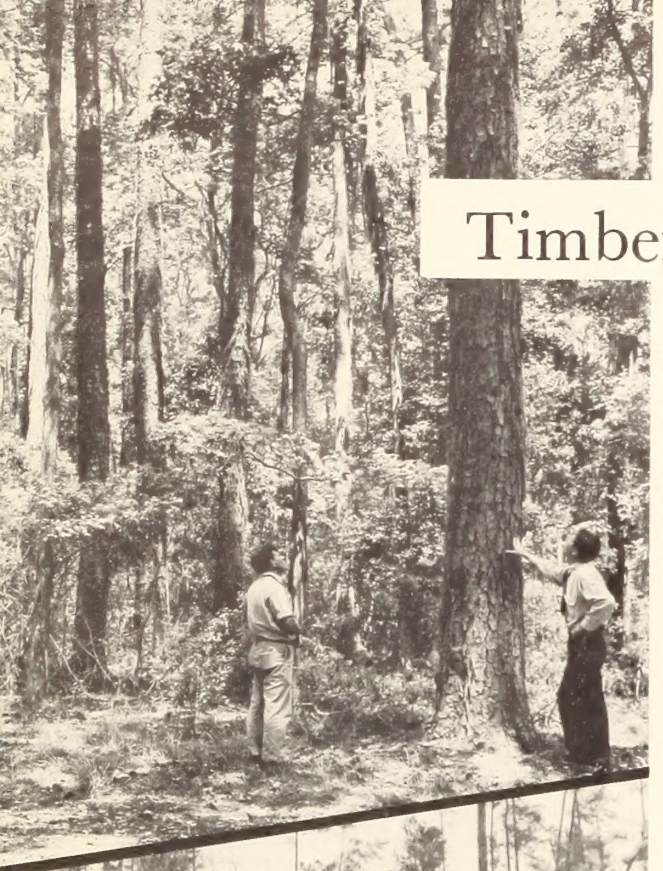



# . . . sufficient to supply 8 million people

In 1955, enough timber was cut from North Carolina's forests to supply the timber needs of 7.7 million people, 3.4 million more than the State's own population.

Other States with less timber must look to States like North Carolina to supply a large part of their timber needs, both now and in the future.



# Timber growth . . .

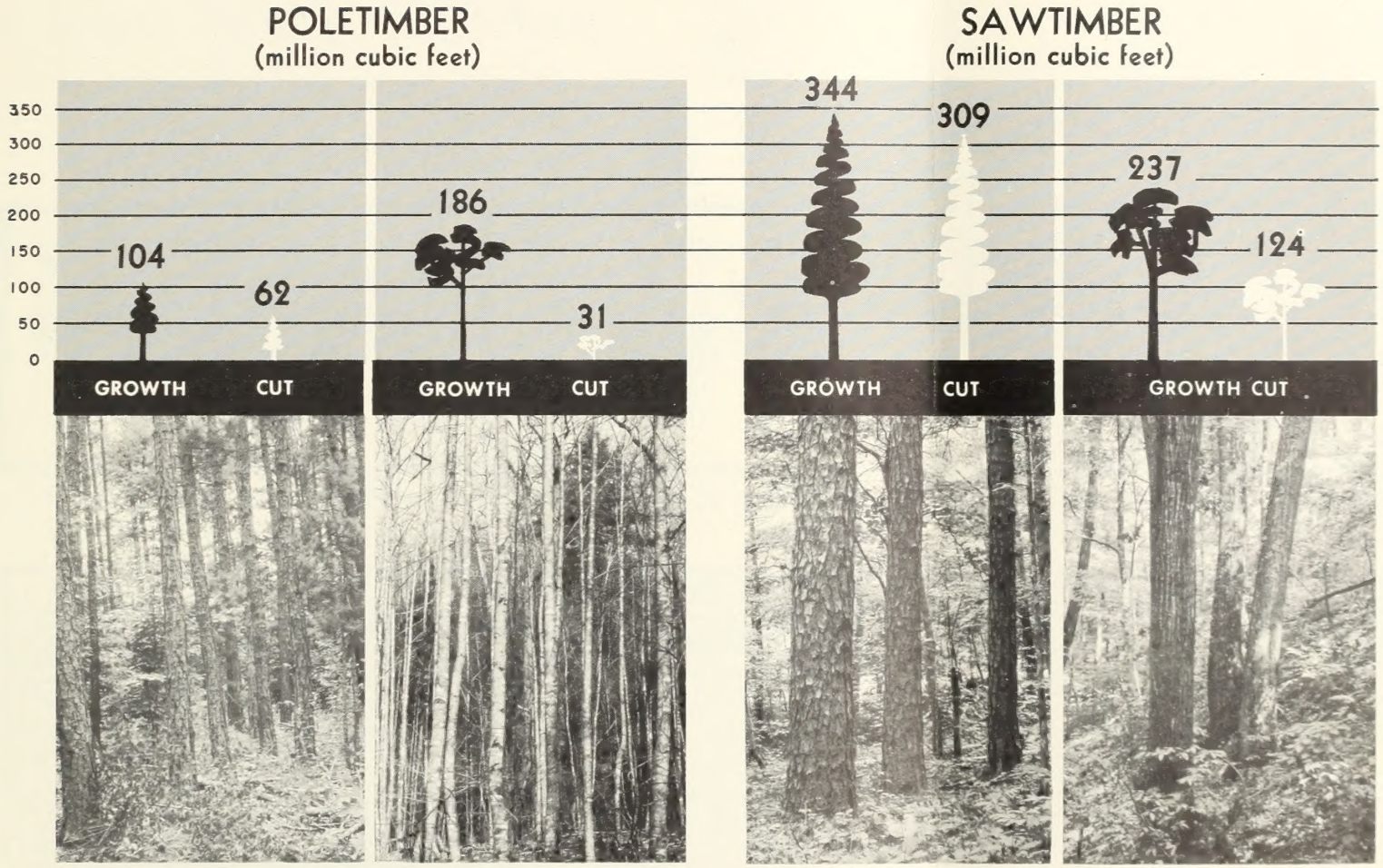
At present, North Carolina's timber is growing faster than it is being cut. In 1955, growth added over 871 million cubic feet to the growing stock inventory volume, while 526 million cubic feet were cut.

Most of this surplus growth is on small trees and little-used hardwoods. The margin of growth over cut becomes smaller and smaller as the size of the timber increases. Cutting pressure is heaviest and growth surpluses are smallest on the older, more valuable trees.

Although growth now exceeds cut, North Carolina still does not provide enough large-size, high-quality timber to meet the demands of its sawmill and furniture industries for clear lumber, face veneer, and structural timbers.

What about the future? Will North Carolina be able to supply the demands made on its timber resources in years to come? In view of the expanding forestry effort and surplus growth, moderate increases in the use of some kinds of wood will be possible without reducing the growing stock.

# . . . now exceeds timber cut




Softwoods
2,325

Hardwoods
3,302

Softwoods
5,407

Hardwoods
5,218

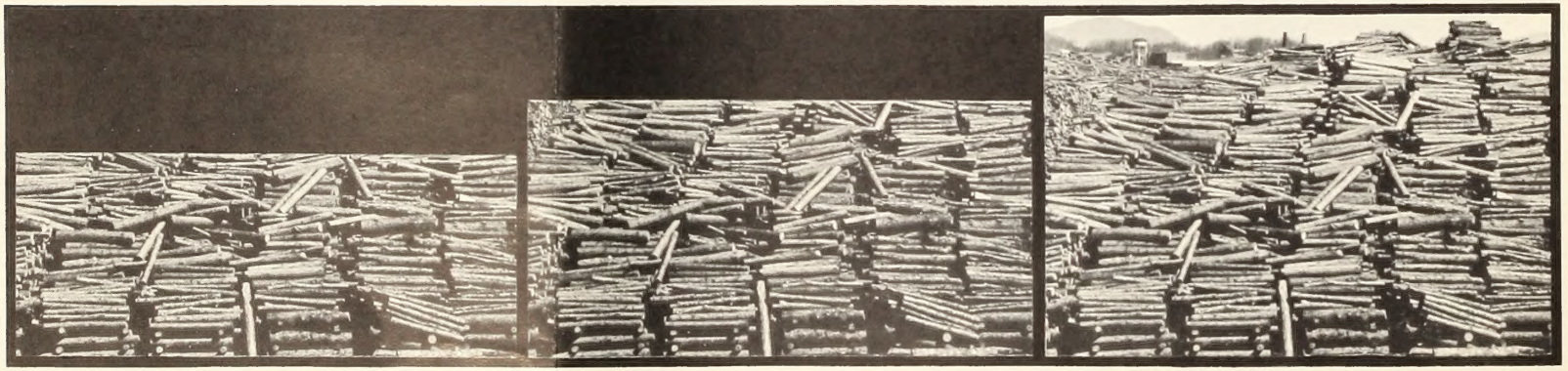
Current inventory - - - million cubic feet

# Millions more Americans in the future . . .

165 million Americans used

215 million Americans might use

275 million Americans might use



11 billion cubic feet

14 billion cubic feet

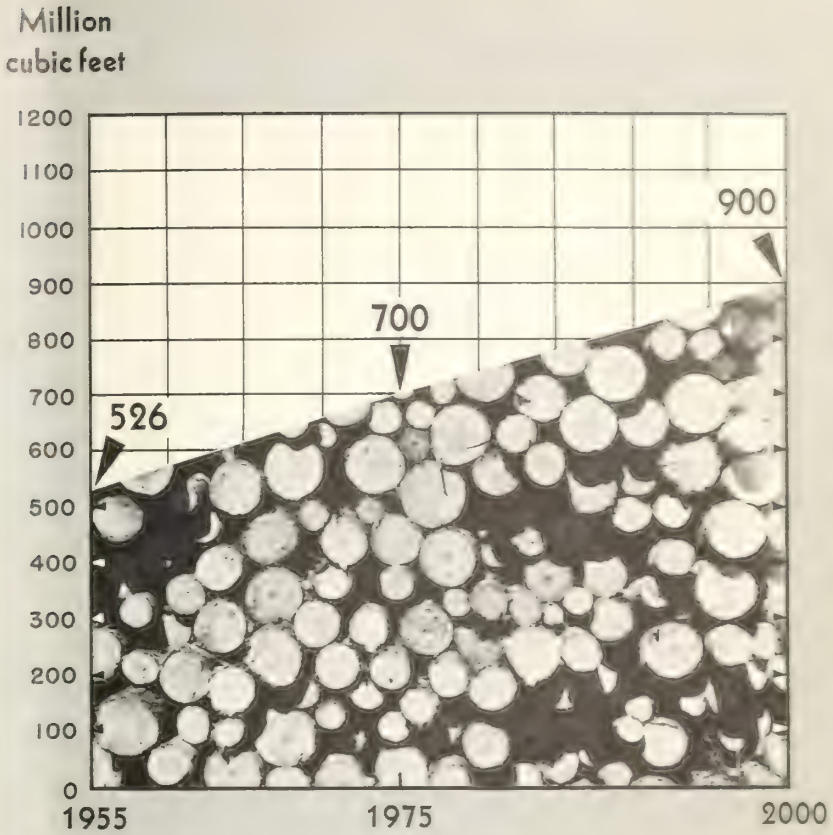
19 billion cubic feet

. . . of timber cut annually from the Nation's forests. These estimates of future population may be conservative. Needed timber cut therefore may be higher than estimated here.

# . . will require more timber from North Carolina

But moderate increases in the amount cut may not be enough in view of the rapidly growing population and the rising need for goods and services. Based on estimated increases in population, just to maintain the present use of wood per person would require a 33-percent increase in the current timber cut by 1975, and a 71-percent increase by the year 2000. Further, as the old-growth timber in the West is cut, the Nation must look to eastern States, such as North Carolina, for a larger share of the total cut.

The chart at the right shows the amount of timber North Carolina would have to cut in 1975 and in 2000 to maintain its present share of a national cut large enough to equal the present per capita use of wood. Because of location and favorable growing conditions, demands on North Carolina's forests should be even greater.




North Carolina must grow more timber in the future. But merely producing large quantities without regard to species and quality will not meet the needs of wood-using industries.

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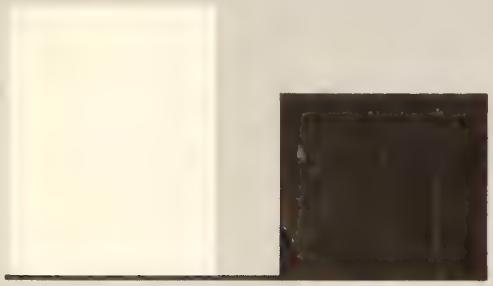
# Timber trends . . .

Yellow-pine sawtimber (trees 10 inches or larger in diameter) is by far the preferred source of raw material among the forest industries in and adjacent to North Carolina. In 1955, this class of timber made up over half the cut, although it comprised only 37 percent of the growth and 30 percent of the entire inventory volume.

Currently, the growth of pine sawtimber exceeds the cut, but the proportion of pine in the stands has been decreasing and is expected to decrease still further. Small pines and hardwoods are gradually taking over.

**In 1955 yellow-pine sawtimber comprised . . .**



**54%** of all timber cut . . .

**37%** of all timber grown

**Yellow-pine sawtimber made up . . .**

**37%** in 1937

**30%** in 1955

**. . . and is expected to make up . . .**

**26%** in 1965

**. . . of the total volume of growing stock.**

Yellow-pine sawtimber . . .

growth of 1.7 billion board-feet

more than sufficient to replace cut of 1.4 billion board-feet,

in 1955 in 1955

but short of replacing potential demands of . . .

1.8 billion board-feet

2.4 board-feet

in 1975 in 2000

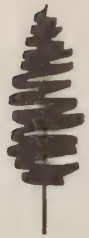
# . . . forecast short supply of pine sawtimber

The preference for pine sawtimber will most likely continue. If so, population increases will create a problem in meeting future demand unless action is taken now to increase the supply.

No general shortage of hardwood timber is foreseen. True, there are current shortages of high-quality hardwoods suitable for face veneer, furniture parts, and other exacting uses, but with a tremendous backlog of young timber coming on, the prospects of meeting future needs are brighter. Protection, stand improvement, and management directed at production of large, clear logs and bolts can provide the needed material.

**At least 100 pine seedlings must be established now . . .**

**. . . to produce a thousand board feet of pine sawtimber by the year 2000.**



# Annual crop of pine seedlings . . .

Growing sawtimber is a long-time undertaking. On the average it takes from 45 to 50 years to grow a 12-inch yellow-pine tree in North Carolina. The pine seedlings that will provide the pine sawtimber needed in the year 2000 must be established now.

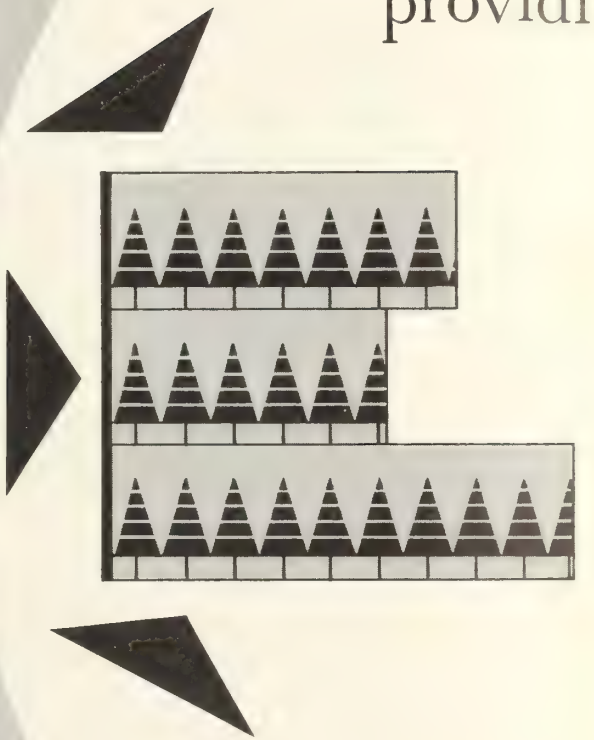
It takes about eleven 12-inch pine trees to produce 1,000 board-feet of lumber. For every 12-inch pine needed in the year 2000, at least 9 pine seedlings must be established now. By that time, 8 of the 9 will have been taken out by natural mortality or removed in cutting operations for small products.

# . . . short of providing for future needs

**174 million**
pine seedlings established in 1956
. . . compared to . . .

**141 million**
pine seedlings needed to replace the volume of pine sawtimber cut in 1955

**236 million**
pine seedlings needed to produce 2.4 billion board-feet of pine sawtimber by the year 2000



Approximately 174 million new pine seedlings were established in North Carolina in 1956. This includes the 34 million pine seedlings planted. The remainder seeded in naturally in old fields, on cutover land, and in openings in the forest stands. If these new pine seedlings are reasonably well spaced, they can be expected to yield about 1.7 billion board-feet of yellow-pine sawtimber by the year 2000.

This yield is enough to provide a future cut greater than the present cut and equal to current growth, but it is far short of the 236 million seedlings that should be established each year to produce 2.4 billion board-feet annually by the year 2000.

# Natural pine regeneration . . .

Pine seedlings established naturally each year . . .

. . . enough to stock

. . . which in 45 to 50 years will yield

Seedlings from natural regeneration will produce by far the major part of the State's future timber crops. Out of the 174 million pine seedlings established annually, 140 million seed in naturally. These natural seedlings may be expected to yield 1.4 billion board-feet of pine sawtimber in 45 to 50 years—just about equal to the current annual cut.

Unless increased efforts are made to encourage natural regeneration, the outlook will be a decrease in the annual crop of pine seedlings. The seeding in of abandoned farmland results in a major source of new seedlings at the present time. As the rate of farms abandoned declines, as it most likely will with the expected increased need for cropland to support our expanding population, this source will decrease. Also, the trend toward more hardwoods in the forest stands is steadily reducing the space available for pine regeneration.

# . . . can be increased

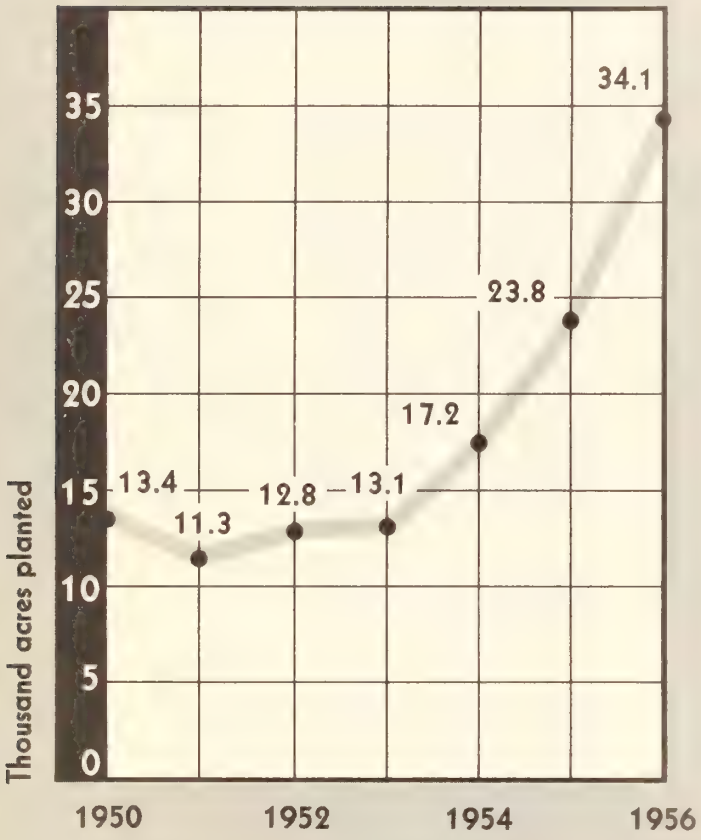
. . . by leaving adequate seed source following cutting

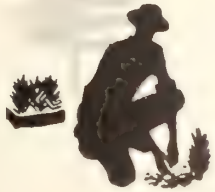
. . . by removing competing shrubs and poor-quality hardwoods

An adequate seed source is the first prerequisite to the natural establishment of pine seedlings. Each year many pine timber tracts are cut so as to leave too few or no pine seed trees. The pine trees left are often so small that by the time they are large enough to bear seed, shrubs and sprout hardwoods have taken over the area.

An adequate seed source, however, does not always insure pine regeneration. Many areas are so densely covered with shrubs and low-quality hardwoods that pines have no chance of becoming established. North Carolina has over 2 million acres of oak-pine type. In many places these stands have an adequate pine seed source, but few, if any, pines can become established until the shrubs and low-quality hardwoods are removed.

# Planting of pine . . .

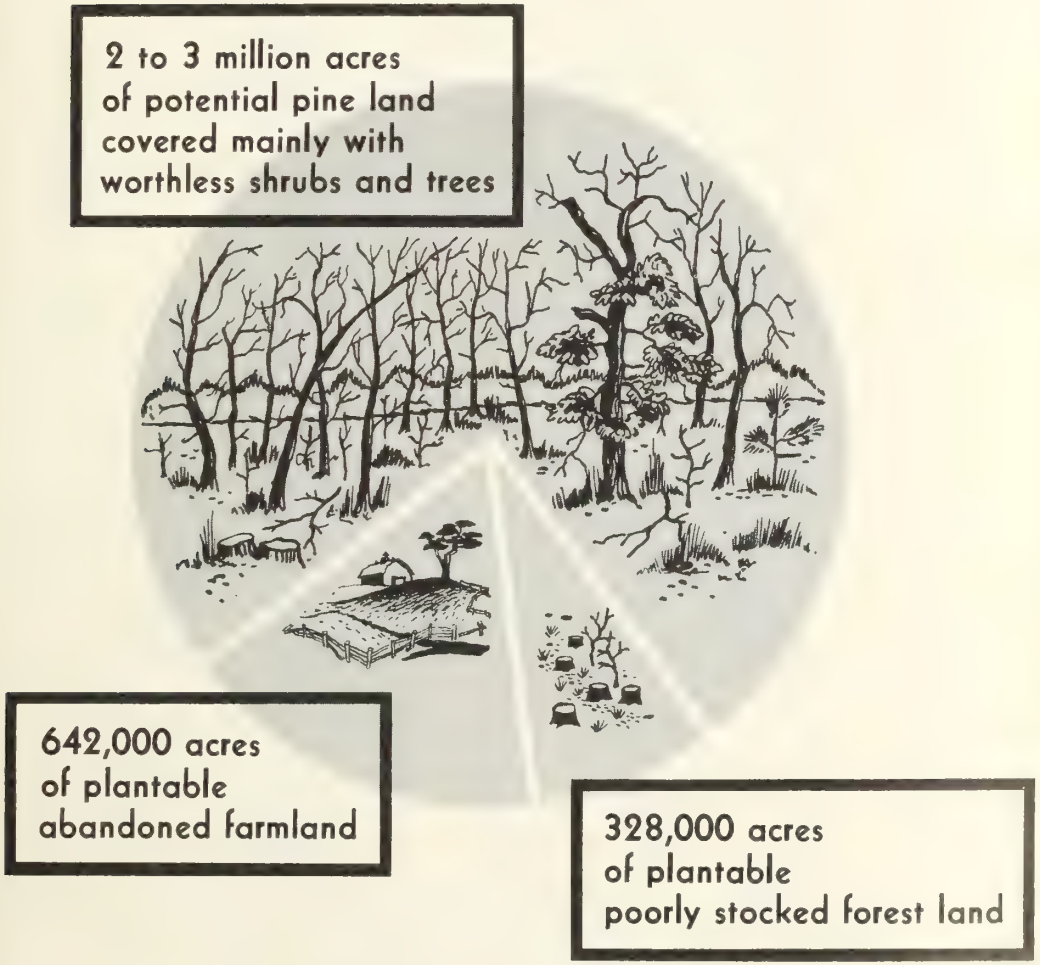


Planting is becoming increasingly important as a supplement to natural regeneration. In 1950, about 13,000 acres of pine plantations were established in North Carolina. By 1954, the area planted increased to 17,000 acres, and during the 1956 planting season, 34,000 acres were planted to pine.

The pine seedlings planted in 1956, along with the 140 million established naturally, were sufficient to provide for a cut of about 1.7 billion board-feet in the future; a cut equal to the current growth.

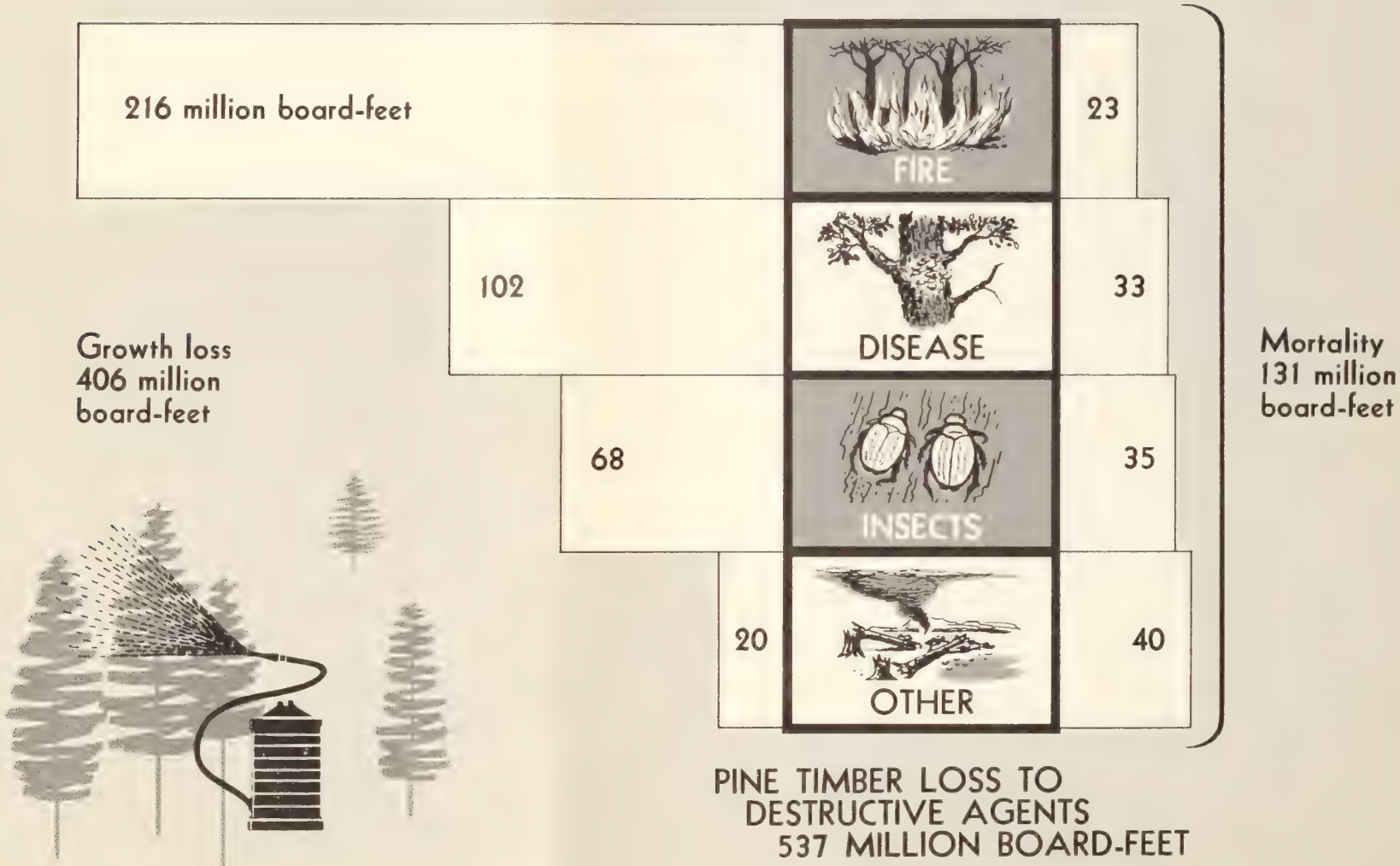
# . . . can be increased



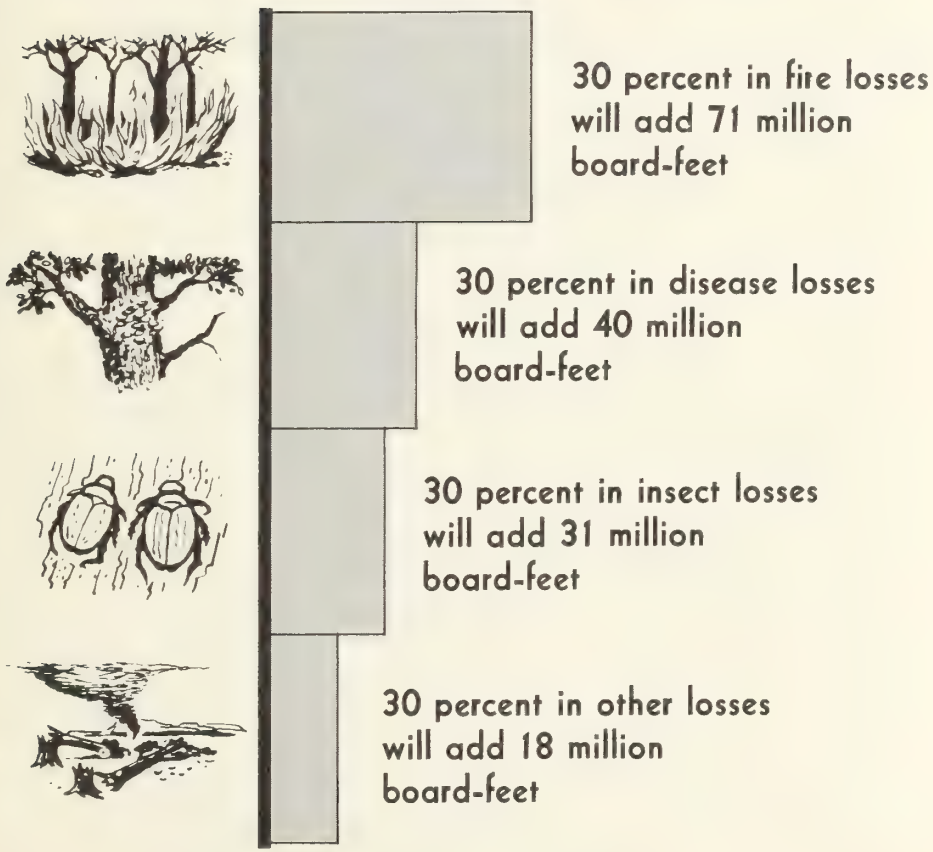

North Carolina has about a million acres of land considered plantable by hand or machine without prior removal of inhibiting shrubs or cull trees. Over 600,000 acres is now nonforest land, mainly abandoned farmland. The remainder is poorly stocked forest land left without an adequate seed source. Under current plans to produce and plant 100 million seedlings per year, 10 years or more will be required to restock this much acreage.

In addition to this plantable land, there is a considerable area that could be planted following the removal of shrubs and low-quality timber. North Carolina has over 5 million acres of upland hardwood type including 200,000 acres of scrub oak. Most, if not all, of this land grew pine at one time in the past, but it has been converted to hardwood type by repeatedly removing the pine and leaving the hardwoods. A considerable part of this land is growing predominantly low-quality timber with little or no present market value. Reestablishment of pine stands on these areas can provide an important potential source of timber for the future.

# Reduction of annual timber losses . . .



# . . . will help increase pine supply




OR A TOTAL OF 160 MILLION BOARD-FEET TO THE ANNUAL PINE GROWTH

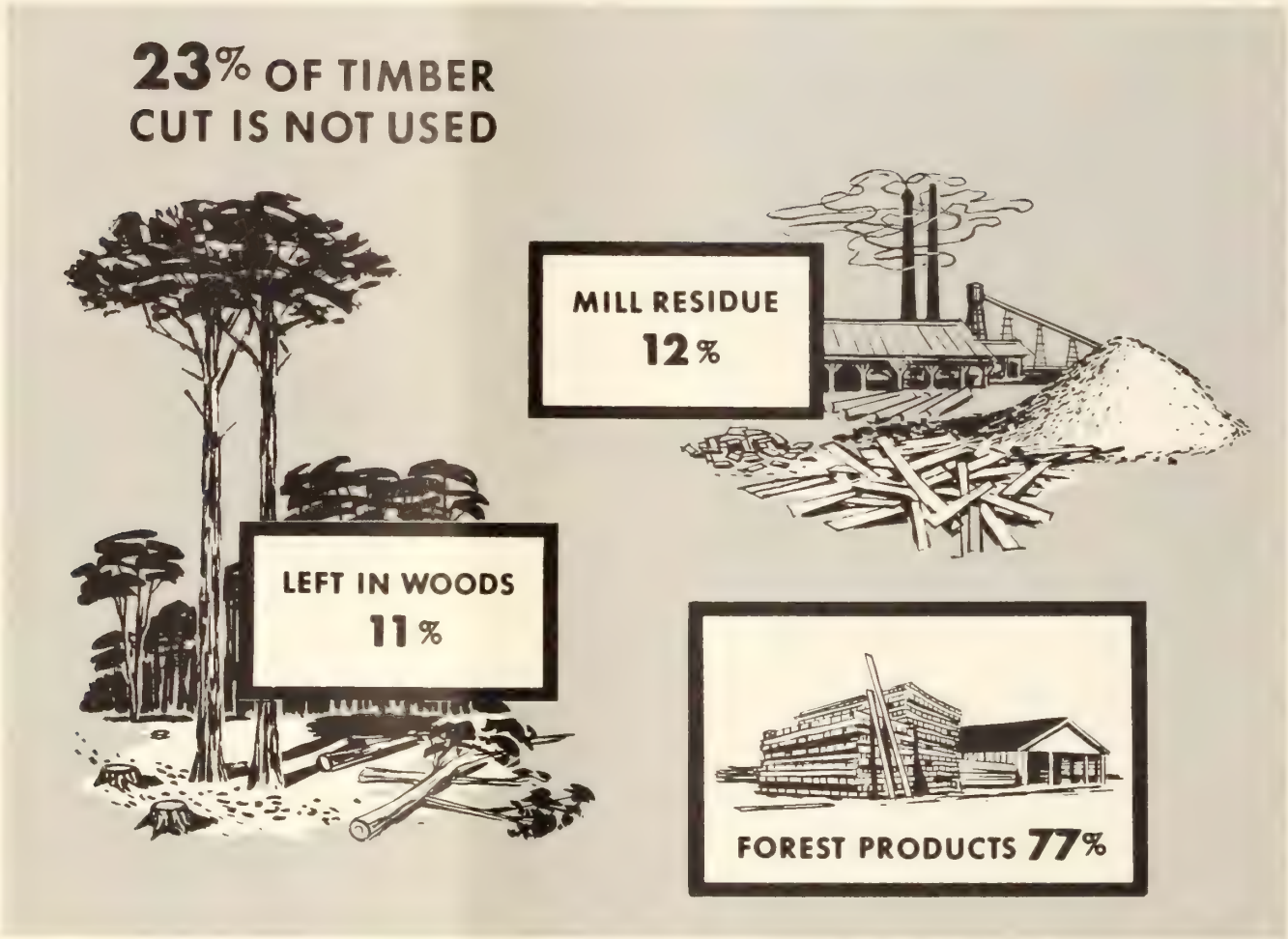
Another way of making more timber available is to cut down on losses from destructive agents, such as fire, disease, and insects. Normally, each year these agents kill 131 million board-feet of pine sawtimber in North Carolina.

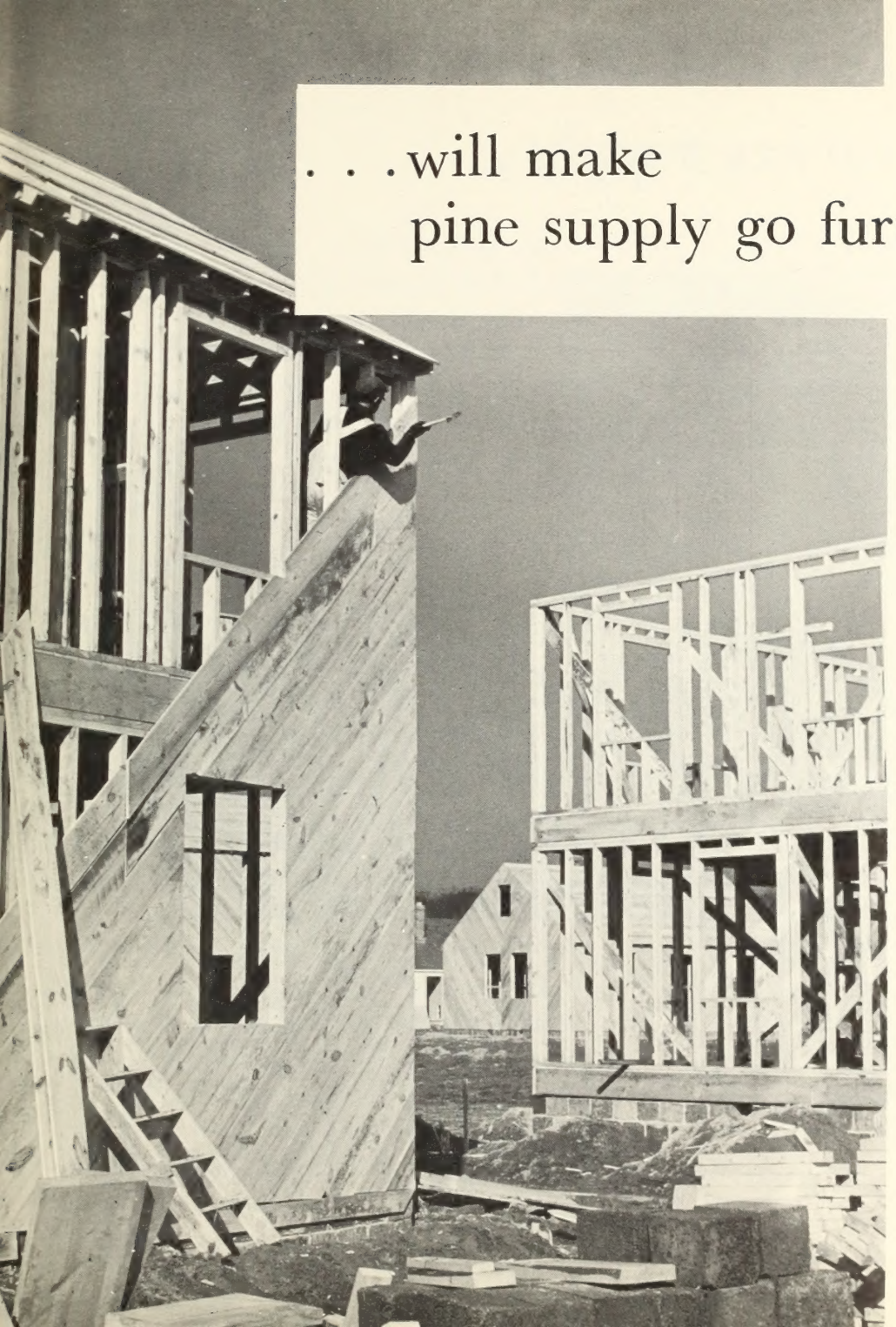
But the sawtimber actually killed is only a small part of the total loss. Other losses, such as the killing of seedlings, destruction of seed source, reduction in growth, and introduction of rot produce a much greater impact upon the future timber supply than mortality. The total annual loss resulting from both mortality and growth loss adds up to 537 million board-feet of pine.

Fire accounts for the smallest volume of pine sawtimber actually killed. But when the effect on growth, timber quality, and stocking is also taken into consideration, fire produces by far the greatest impact upon the timber supply. Fire is responsible for 239 million board-feet or 45 percent of the total timber loss.

While it is not practical to eliminate all timber losses, a 30-percent decrease would mean a saving of 160 million board-feet of pine sawtimber.

# More complete utilization . . .





# . . . will make pine supply go further

About a fourth of the timber cut in North Carolina either stays in the woods as logging residue or is burned as refuse at the plant.

Each year, approximately half a million cords of pinewood in tops and cull sections are left in the woods, most of it after sawlog operations. Since much of this material is very rough and widely scattered, its complete utilization is not feasible. But using no more than 25 percent of the pine logging residue for pulpwood would mean making 125,000 cords of wood available to forest industries without drawing from the reservoir of growing timber.

Annually, North Carolina sawmills accumulate 630,000 cords of pine slabs and edgings. In 1956, about 10 percent of this material was chipped for pulping. As with logging residues left in the woods, it is not practical to utilize all the slabs and edgings that pile up at sawmills. Yet increasing the use of this material to one-third of the amount available would add 210,000 cords to the wood supply.

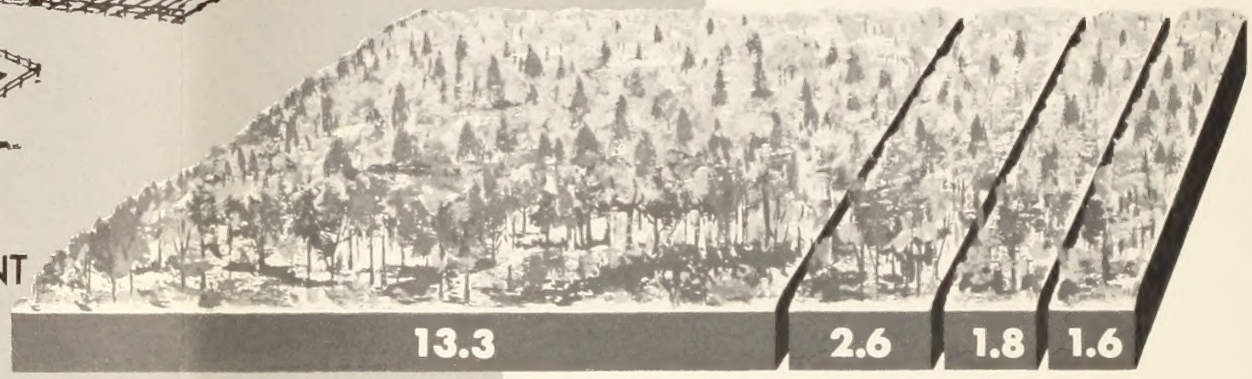
Greater use of logging and plant residues to meet current industrial needs would permit leaving 17 million cubic feet of young pine in the forest to grow. When mature, these trees would contribute 120 million board-feet to the future timber supply.

# Key to future timber supply . . .

THE 222,000 FARM WOODLAND OWNERS WITH FOREST HOLDINGS AVERAGING . . . .

**60** ACRES

OWN **69** PERCENT OF THE COMMERCIAL FOREST LAND




13.3 million acres Private farm

Public 1.6 million acres

2.6 million acres Forest industries

1.8 million acres Other private

# . . . held by farm woodland owners

North Carolina must depend upon 222,000 farm woodland owners with forest land holdings averaging about 60 acres each to provide for the biggest share of future timber needs. The Federal government owns 1.3 of the 19.3 million acres of forest land. Other public ownership amounts to only 0.3 million acres. Pulp companies own 1.1 million acres and other wood-using industries, 1.5 million acres.

Cutover public land and lands owned by wood-using industries are left in a much more productive condition than other forest land. Improvements in forest practices are expected to continue on these lands. While the outlook is for a substantial increase in growth, there is not enough of this kind of ownership to provide more than a small part of the total need even if the land grew all the timber that it is capable of growing. Farmers own more than twice as much forest land as do all others together; and their woodlands, because of neglect, are among the least productive. These lands offer the greatest need and opportunity for increasing the timber supply.

# How to provide 2.4 billion board-feet of pine annually

| | Million board-feet |
|---|---|
| ✓ Increase natural regeneration rate<br>. . . by leaving seed source following cutting<br>. . . by removing shrubs and worthless hardwoods where seed source is present | 1,120 |
| ✓ Plant 100 million pine seedlings annually<br>. . . by planting poorly stocked forest land<br>. . . by planting abandoned farmland<br>. . . by replacing stands of worthless shrubs and unsalable hardwoods with pine | 1,000 |
| ✓ Reduce losses from destructive agents<br>. . . by lowering losses from fire, insects, disease, and other causes | 160 |
| ✓ Make better use of timber cut<br>. . . by using 25 percent of the logging residue<br>. . . by using 33 percent of the plant residue | 120 |
| Total . . . | 2,400 |

**And this may not be enough.** **North Carolina should increase growth still further to provide a reasonable share of the increased cut of southern pine that will be needed as supplies of western old-growth softwoods decline. This needed growth may be as much as 4.0 billion board feet annually.**

# CONCLUSIONS

*The short-term timber supply outlook in North Carolina is quite favorable. Present growth is more than sufficient to replace the cut for all classes of timber except some types of highest quality.*

*The long-term outlook is not so favorable, especially if the strong preference for pine sawtimber continues. Just to maintain the present rate of pine regeneration will require substantial increases in planting and in hardwood control.*

*If forestry efforts are greatly intensified, North Carolina has the opportunity to greatly increase its pine sawtimber growth during the next 50 years. The big job is to make it possible for the State's more than 200,000 farmers, who own 70 percent of the forest land, to practice better forestry.*

Washington, D. C. January 1959



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